AEROLOGICAL OBSERVATIONS

[The Aerological Division, W. R. Gregg in charge]

By L. T. SAMUELS

Free-air temperatures during the month averaged mostly above normal at the northern stations and below normal at the southern stations. The largest positive departures occurred at Ellendale and Omaha. Negative departures at the southern stations were small in practically all cases, the largest values occurring at San Diego.

Relative humidity departures were of opposite sign to those of temperature at the southern stations and at Omaha but were mostly of the same sign as those for temperature at the other northern stations. The largest positive departures occurred at Dallas.

Resultant free-air wind velocity, particularly at the southern stations, averaged in general below normal during the month. Resultant directions had in most cases a greater southerly component than normal at the northern stations and a greater than normal northerly component at the southern stations.

Airplane observations were made at the four Weather Bureau stations on every day during the month and averaged above 5,000 meters at all stations. The highest single flight reached 6,421 meters at Omaha on the 1st.

Kite flying was permanently discontinued at the close of the month at Due West incidental to the closing of this station in June.

TABLE 1.—*Free-air temperatures, and relative humidities, during May, 1932*

TEMPERATURE (° C.)

Altitude (meters) m. s. l.	Chicago, Ill. (190 meters) [1]		Cleveland, Ohio (245 meters) [1]		Dallas, Tex. (149 meters) [2]		Due West, S. C. (217 meters)		Ellendale, N. Dak. (444 meters)		Hampton Roads, Va. (2 meters) [3]		Omaha, Nebr. (299 meters) [4]		Pensacola, Fla. (2 meters) [3]		San Diego, Calif. (9 meters) [3]		Washington, D. C. (2 meters) [3]	
	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal
Surface	11.9		10.5		17.8		19.7	−0.5	14.1	+1.0	17.5	−1.2	13.4		21.3	−1.2	17.3	−1.3	15.5	−2.5
500	13.6	+0.2	12.5	−0.9	19.8	+0.7	17.1	−0.6	13.7	+1.0	16.0	−1.9	14.1	−1.0	20.1	−0.4	12.6	−2.1	15.2	−0.3
1,000	12.4	+2.1	11.6	+1.3	18.1	+1.5	14.3	−0.5	11.2	+1.7	14.2	−1.5	14.5	+2.5	17.2	−0.6	12.8	−1.6	14.2	+1.0
1,500	9.6	+2.1	8.6	+1.1	15.0	+0.3	11.2	−0.5	9.0	+2.4			12.5	+3.3						
2,000	6.7	+1.7	5.7	+0.7	11.8	−0.5	8.4	−0.4	6.5	+2.9	8.1	−1.8	10.0	+3.4	12.1	−0.3	9.0	−2.6	9.6	+1.4
2,500	3.8	+1.2	2.8	+0.2	9.1	−0.5	5.6	−0.4	3.8	+3.1			7.0	+3.1						
3,000	0.8	+0.8	0.1	+0.1	6.5	−0.1	2.8	−0.2	1.0	+3.1	3.1	−0.8	3.9	+2.9	7.1	−0.1	4.4	−0.9	4.0	+1.3
4,000	−5.0	+0.7	−6.3	−0.6	0.1	−0.3	−3.0	+0.1	−4.6	+3.4			−3.3	+1.5					−1.4	+1.9
5,000	−11.6	+0.1	−13.1	−1.4	−6.8	−1.5	−10.4	−0.4	−9.4	+4.7			−10.4	+0.3						

RELATIVE HUMIDITY (PER CENT)

Surface	74		83		86		69	+4	68	+8	72	+3	78		80	+1	72	+4	69	+5
500	64	−1	71	+6	73	0	69	+4	68	+8	68	+9	72	+8	74	+1	82	+6	60	+1
1,000	58	−6	64	0	69	0	68	+4	65	+6	63	+9	63	+1	68	+3	65	+5	51	−5
1,500	58	−4	64	+2	68	+10	65	+1	64	+4			60	−2						
2,000	55	−3	63	+5	67	+18	61	−1	64	+4	61	+10	57	−3	58	+6	52	+16	51	−5
2,500	55	+3	60	+8	61	+16	56	−3	64	+5			56	−2						
3,000	56	+8	57	+9	55	+10	50	−5	66	+9	57	+5	54	−4	52	+11	35	+9	51	−1
4,000	51	+6	51	+6	48	+2	44	−8	67	+14			51	−8					43	−6
5,000	46	+2	46	+2	45	−8	38	−12	66	+15			47	−15						

[1] Normals for Royal Center, Ind., used; surface departures omitted because of difference in time between current airplane observations and those of kites at Royal Center, Ind.
[2] Temperature departures based on normals determined by interpolating between those of Groesbeck, Tex., and Broken Arrow, Okla.
[3] Naval air stations.
[4] Normals for Drexel, Nebr., used; surface departures omitted because of difference in time between current airplane observations and those of kites at Drexel, Nebr.
Humidity departures based on normals of Groesbeck, Tex.
Surface departures omitted because of difference in time of current airplane observations and those of kites at Groesbeck and Broken Arrow.

TABLE 2.—*Free-air resultant winds (meters per second) based on pilot balloon observations made near 7 a. m. (E. S. T.) during May, 1932*

[Wind from N=360; E=90, etc.]

Altitude (meters) m. s. l.	Albuquerque, N. Mex. (1,528 meters)		Bismarck, N. Dak. (518 meters)		Brownsville, Tex. (12 meters)		Burlington, Vt. (132 meters)		Cheyenne, Wyo. (1,873 meters)		Chicago, Ill. (198 meters)		Cleveland, Ohio (245 meters)		Dallas, Tex. (154 meters)		Due West, S. C. (217 meters)		Havre, Mont. (762 meters)		Jacksonville, Fla. (14 meters)		Key West, Fla. (11 meters)	
	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity
	°		°		°		°		°		°		°		°		°		°		°		°	
Surface	35	0.8	52	1.5	135	2.1	193	1.9	291	2.7	254	1.6	180	1.3	105	0.6	25	1.0	189	0.5	111	0.1	93	1.5
500					145	7.6	236	3.0			241	6.0	233	3.2	147	4.4	50	0.9			57	0.7	101	3.1
1,000			135	1.0	141	6.2	291	4.0			254	5.3	271	4.3	175	4.6	325	1.7	219	1.7	160	0.6	135	2.4
1,500			208	1.7	151	3.7	307	6.8			265	5.5	275	5.5	201	3.9	294	1.4	269	2.7	191	1.3	195	1.6
2,000	204	0.5	253	1.9	160	0.7	313	7.3	273	3.3	256	5.3	277	6.2	247	1.8	269	2.1	284	3.9	238	1.2	204	2.3
2,500	260	2.6	270	4.5	306	1.3	308	7.5	262	4.4	275	4.2	291	6.4	328	2.0	277	2.7	278	4.8	256	0.9	214	3.2
3,000	256	4.1	281	6.0	316	3.2	304	6.3	272	5.3	273	3.7	282	8.2	341	2.8	292	3.5	261	5.5	138	0.5	219	2.4
4,000	245	6.5	288	7.6	310	5.5	308	4.2	283	5.0			296	8.5	329	3.8	291	3.7	263	7.9	279	1.6	270	3.7
5,000	235	8.7			316	9.6			275	5.6			311	10.8	330	6.0	278	4.5	258	9.2	253	4.9	352	3.6

TABLE 2.—*Free-air resultant winds (meters per second) based on pilot balloon observations made near 7 a. m. (E. S. T.) during May, 1932*—Continued

[Wind from N=360; E=90, etc.]

	Los Angeles, Calif. (217 meters)		Medford, Oreg. (410 meters)		Memphis, Tenn. (85 meters)		New Orleans, La. (25 meters)		Oakland, Calif. (8 meters)		Oklahoma City, Okla. (402 meters)		Omaha, Nebr. (299 meters)		Phoenix, Ariz. (356 meters)		Salt Lake City, Utah (1,294 meters)		Sault Ste. Marie, Mich. (198 meters)		Seattle, Wash. (14 meters)		Washington, D. C. (10 meters)	
	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity
	°		°		°		°		°		°		°		°		°		°		°		°	
Surface	108	0.6	300	0.4	78	0.4	55	1.4	239	2.0	154	2.3	146	1.8	99	1.6	147	2.6	61	0.6	161	0.5	331	1.0
500	107	1.2	303	0.8	129	1.8	106	3.4	268	2.3	167	3.8	197	4.2	208	0.4	------	------	229	0.7	243	0.2	304	3.7
1,000	357	1.9	318	0.9	240	1.5	132	1.0	319	4.5	190	6.3	235	6.8	262	2.4	------	------	271	3.8	219	1.2	317	4.0
1,500	291	2.0	199	0.8	258	2.5	139	0.6	321	4.3	221	5.0	252	6.3	247	1.8	168	4.2	282	5.8	212	1.7	308	4.4
2,000	289	3.9	249	1.4	256	1.8	200	1.2	311	4.5	258	3.6	261	6.0	214	2.9	181	3.9	277	5.6	240	1.4	302	6.4
2,500	288	2.8	257	3.5	282	1.6	332	0.9	319	5.0	298	2.4	272	6.0	201	4.2	207	3.0	299	6.4	229	3.3	291	7.3
3,000	294	4.1	269	3.9	331	1.7	310	0.8	322	6.8	314	2.9	284	7.1	209	6.2	228	4.0	314	8.2	236	4.8	292	8.6
4,000	------	------	279	6.1	341	5.5	286	3.4	------	------	------	------	275	6.7	215	7.9	257	4.8	330	13.6	------	------	325	5.8

RIVERS AND FLOODS

By MONTROSE W. HAYES

[In charge River and Flood Division]

In May there were floods of minor importance in the Potomac, James, and Savannah Rivers along the Atlantic slope, the Barren, Green, and Pigeon Rivers in the Ohio Basin and in some of the rivers of New Mexico, Idaho, and Washington. There was a moderate flood in the Colorado River, caused by melting snow; it did not cause any loss of consequence. Heavy rains in Nebraska on the night of the 6th–7th caused a flood in the Elkhorn River, a small tributary to the Platte. No flood service is maintained on the Elkhorn.

Table of flood stages in May, 1932

[All dates in May unless otherwise specified]

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
ATLANTIC SLOPE DRAINAGE					
Potomac:	*Feet*			*Feet*	
Harpers Ferry, W. Va.	18	13	14	20.0	13
Sycamore Island, Md.	10	13	15	14.6	14
James: Columbia, Va.	10	3	4	13.9	3
		12	15	12.2	13
Savannah: Ellenton, S. C.	14	4	5	15.3	5
MISSISSIPPI SYSTEM					
Ohio Basin					
Barren: Bowling Green, Ky.	20	1	2	23.0	1
Green: Lock 4, Woodbury, Ky.	33	1	2	34.6	2
Pigeon: Newport, Tenn.	6	1	1	8.0	1
Atchafalaya Basin					
Atchafalaya: Atchafalaya, La.	22	Dec. 27	5	24.9	Mar. 3–5
WEST GULF OF MEXICO DRAINAGE					
Pecos: Fort Sumner, N. Mex.	5	11	12	5.5	12
Rio Grande:					
Espanola, N. Mex.	7	16	29	7.8	20–22, 24, 25
San Marcial, N. Mex.	7	22	28	7.3	23
GULF OF CALIFORNIA DRAINAGE					
North Fork: Paonia, Colo.	9	12	20	9.7	13
		22	22	9.2	22
Gunnison: Delta, Colo.	9	12	26	10.2	23
Green: Elgin, Utah	12	24	27	12.3	27
Colorado:					
Fruita, Colo.	12	24	24	12.0	24
Parker, Ariz.	7	1	(1)	12.0	30–31
PACIFIC SLOPE DRAINAGE					
Columbia Basin					
Clearwater: Kamiah, Idaho	12	8	23	15.6	14
Columbia:					
Marcus, Wash.	24	7	(1)	31.8	27
Vancouver, Wash.	15	10	(1)	21.6	25

[1] Continued into June.

The passing of the Atchafalaya River below the flood stage on May 5 brought an end to the numerous and serious floods which prevailed in the tributary streams of the lower Mississippi Basin during the preceding five months.

Statement of flood losses

[The losses in the lower Mississippi Basin were in the winter and early spring; the others were in May]

MISSISSIPPI SYSTEM

Missouri Basin-Elkhorn River in Nebraska

Tangible property totally or partially destroyed	$25,400
Prospective crops	2,500
Livestock and other movable property	1,100

Ohio Basin-Barren River in Kentucky

Prospective crops	5,000

Lower Mississippi Basin-Tallahatchie and Yazoo Rivers

Tangible property totally or partially destroyed	750,000
Matured crops	500,000
Livestock and other movable property	25,000
Suspension of business, including wages of employees	175,000

Atchafalaya Basin

Tangible property, totally or partially destroyed	6,210
Matured crops	1,725
Prospective crops	49,450
Livestock and other movable property	500

WEST GULF OF MEXICO DRAINAGE

Rio Grande River in New Mexico

Tangible property, totally or partially destroyed	10,000

GULF OF CALIFORNIA DRAINAGE

Colorado River

Tangible property, totally or partially destroyed	250

Estimated value of property saved by warnings:

Barren River in Kentucky	1,000
Green River in Kentucky	100
Tallahatchie and Yazoo Rivers in Mississippi, in the winter and late spring	50,000